Title: Limits and l'Hospital's rule

Author: Kateřina Ranšová

Department: Department of Mathematics Education

Supervisor: RNDr. Jakub Staněk, Ph.D., Department of Mathematics Education

Abstract: The aim of this BA thesis is to introduce to the reader the concept of the limit of function and the means of its solution. The main impact of the thesis lies in a didactic approach and in the connection of a limit theory with its graphic representation and different methods of algebraic calculation. The text consists of eight chapters which can be divided into two parts according to their content. The first part explores the term "the limit of the function". Individual types of limits are then defined. To facilitate understanding, most of the definitions are accompanied by a particular example and a graphic representation . The first part is concluded by a unified definition which by means of the term "vicinity" summarizes all preceding types of limits. The other part deals with some basic methods of limits' calculation. Other topics include Taylor Series, l'Hospital's Rule and their applications to the limits. The core of the thesis is a comparison of calculation by means of l'Hospital's Rule and Taylor Series. The conclusion of the thesis presents some advantages and disadvantages of applying Taylor Series and l'Hospital's Rule to the calculation of limits.

Keywords: limit, Taylor Series, l'Hospital's Rule, calculation limit